

Claims

1. A method for the enhancement of orange juice, comprising:

selecting a supply of citrus fruit;

shaving natural flavedo from the supply of citrus fruit to provide a quantity of natural flavedo shavings;

washing the quantity of natural flavedo shavings with a wash composition having a principal washing component which is selected from the group consisting of an alcohol of at least C-5 and up to about C-10, an ester of up to about C-5, a ketone of up to about C-5, an alkane of up to about C-10, a halogenated hydrocarbon of up to about C-5, an aromatic solvent of up to about C-10, or combinations thereof, each said washing component being suitable for use in food processing;

separating, after said washing, said natural flavedo shavings from said wash composition to thereby provide washed shavings;

drying said washed shavings to a selected moisture content and reducing the washed shavings to a particle size of not greater than about 150 microns to thereby provide a washed juice enhancement powder; and

combining said washed juice enhancement powder with a supply of orange juice in order to thereby provide an orange juice which is enhanced in at least its orange color intensity.

2. The juice enhancement method according to claim 1, wherein the selected moisture content of the drying procedure is not greater than about 20 weight percent moisture, based on the weight of the washed shavings after same are thus dried.

3. The juice enhancement method according to claim 1, wherein the selected moisture content of the drying procedure is not greater than about 12 weight percent moisture, based on the weight of the washed shavings after same are thus dried.

4. The juice enhancement method according to claim 1, wherein the selected moisture content of the drying procedure is between about 5 and about 15 weight percent moisture, based on the weight of the washed shavings after same are thus dried.

5. The juice enhancement method according to claim 1, wherein said selected moisture content of the drying procedure is not greater than about 15 weight percent moisture, based on the total weight of the washed color enhancement powder.

6. The juice enhancement method according to claim 1, wherein said reducing of the particle size procedure is initiated after said drying of the washed shavings is substantially completed.

7. The juice enhancement method according to claim 1, wherein said reducing of the particle size procedure reduces the particle size of the washed color enhancement powder to between about 50 and about 150 microns.

8. The juice enhancement method according to claim 1, wherein said reducing of the particle size procedure reduces the particle size of the washed juice enhancement powder to between about 75 and about 100 microns.

9. The juice enhancement method according to claim 1, wherein said combining procedure combines about 0.25 weight percent or less, based on the total weight of the enhanced orange juice, of said washed juice enhancement powder, while effecting an increase in the Color Value of the supply of orange juice, said Color Value increase being at least 1 OJ Index unit.

10. The juice enhancement method according to claim 1, wherein said combining procedure combines about 0.5 weight percent or less, based on the total weight of the enhanced orange juice, of said washed juice enhancement powder, while effecting an increase in the Color Value of the supply of orange juice, said Color Value increase being at least 2 OJ Index units.

11. The juice enhancement method according to claim 1, wherein said combining procedure combines between about 0.5 and about 0.75 weight percent, based on the total weight of the enhanced orange juice, of said washed juice enhancement powder.

12. The juice enhancement method according to claim 1, wherein the citrus fruit of the selecting procedure is an orange variety or a tangerine variety.

13. The juice enhancement method according to claim 1, wherein said shaving procedure removes an outside layer of the citrus fruit, which layer has a thickness of not more than about 1 mm, to thereby define said natural flavedo shavings.

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14. The juice enhancement method according to claim 1, wherein said shaving procedure removes an outside layer of the citrus fruit, which layer excludes albedo in any substantial quantity, to thereby define said natural flavedo shavings.

15. The juice enhancement method according to claim 1, wherein said drying procedure includes heating of said washed shavings until a moisture content of 20 weight percent or less is imparted to said washed juice enhancement powder.

16. The juice enhancement method according to claim 1, wherein said reducing of the particle size procedure is carried out generally simultaneously with said washing procedure.

17. The juice enhancement method according to claim 1, wherein said washing component is methylene chloride.

18. The juice enhancement method according to claim 1, wherein said washing component is acetone.

19. The juice enhancement method according to claim 1, wherein said washing component is benzene.

20. The juice enhancement method according to claim 1, wherein the supply of orange juice is an early season, Grade B color not-from-concentrate orange juice, and said combining procedure raises the OJ Index of the enhanced orange juice by at least 3 Color Numbers.

21. The juice enhancement method according to claim 1, wherein said combining step provides said orange juice with approximately 0.5 to approximately 1.5 mg of Vitamin A per 100 grams of said juice enhancement powder and with approximately 500 to approximately 900 mg of hesperidin per 100 grams of said juice enhancement powder.

22. A method for the enhancement of orange juice, comprising:

selecting a supply of citrus fruit;

shaving natural flavedo from the supply of citrus fruit to provide a quantity of natural flavedo shavings;

washing the quantity of natural flavedo shavings with a wash composition having a principal washing component which is selected from the group consisting of an alcohol of at least C-5 and up to about C-10, an ester of up to about C-5, a ketone of up to about C-5, an alkane of up to about C-10, a halogenated hydrocarbon of up to about C-5, or combinations thereof, each said washing component being suitable for use in food processing;

separating, after said washing, said natural flavedo shavings from said wash composition to thereby provide washed shavings;

drying said washed shavings to a selected moisture content and reducing the washed shavings to a particle size of not greater than about 150 microns to thereby provide a washed juice enhancement powder; and

combining said washed juice enhancement powder with a supply of orange juice in order to thereby provide an orange juice which is enhanced in at least its orange color intensity.

23. A method for enhancing orange juice color without substantially negatively impacting flavor of the originating orange juice and without incorporating any synthetic color additives, comprising:

selecting a supply of citrus fruit;

shaving natural flavedo from the supply of citrus fruit to provide a quantity of natural flavedo shavings;

washing the quantity of natural flavedo shavings with a liquid wash composition which is selected from the group consisting of an alcohol of at least C-5 and up to about C-10, an ester of up to about C-5, a ketone of up to about C-5, an alkane of up to about C-10, a halogenated hydrocarbon of up to about C-5, an aromatic solvent of up to about C-10, or combinations thereof, each said washing component being suitable for use in food processing;

reducing the shavings to a particle size of not greater than about 150 microns to thereby provide a washed color enhancement powder;

separating, after said washing, said natural flavedo shavings from said liquid wash composition to thereby provide washed shavings;

drying said washed shavings to shavings having the particle size of not greater than about 150 microns and a selected moisture content of not greater than about 20 weight percent, based on the weight of the shavings after such drying;

combining said washed color enhancement powder with a supply of not-from-concentrate orange juice in order to thereby provide a color-enhanced not-from-concentrate orange juice; and

said washed color enhancement powder provides said color-enhanced not-from-concentrate orange juice which has

sensory attributes which substantially comport with those of the supply of not-from-concentrate orange juice.

24. The color enhancement method according to claim 23, wherein the selected moisture content of the drying procedure is not greater than about 12 weight percent moisture, based on the weight of the washed shavings after same are thus dried.

25. The color enhancement method according to claim 23, wherein the washing component is methylene chloride.

26. The color enhancement method according to claim 23, wherein said washing component is acetone.

27. The juice enhancement method according to claim 23, wherein said washing component is benzene.

28. The color enhancement method according to claim 23, wherein said reducing of particle size procedure reduces the particle size of the washed color enhancement powder to between about 50 and about 150 microns.

29. The color enhancement method according to claim 23, wherein said reducing of particle size procedure reduces the particle size of the washed color enhancement powder to between about 75 and about 100 microns.

30. The color enhancement method according to claim 23, wherein said combining procedure combines about 0.25 weight percent or less, based on the total weight of the color enhanced orange juice, of said washed color enhancement powder, while effecting an increase in the Color

Value of the supply of orange juice, said Color Value increase being at least 1 OJ Index unit.

31. The color enhancement method according to claim 23, wherein said combining procedure combines about 0.5 weight percent or less, based on the total weight of the color enhanced orange juice, of said washed color enhancement powder, while effecting an increase in the Color Value of the supply of orange juice, said Color Value increase being at least 2 OJ Index units.

32. The color enhancement method according to claim 23, wherein said combining procedure combines between about 0.5 and about 0.75 weight percent, based on the total weight of the color enhanced orange juice, of said washed color enhancement powder.

33. The color enhancement method according to claim 23, wherein the citrus fruit of the selecting procedure is an orange variety or a tangerine variety.

34. The color enhancement method according to claim 23, wherein said shaving procedure removes an outside layer of the citrus fruit, which layer has a thickness of not more than about 1 mm, to thereby define said natural flavedo shavings.

35. The color enhancement method according to claim 23, wherein said shaving procedure removes an outside layer of the citrus fruit, which layer excludes albedo in any substantial quantity, to thereby define said natural flavedo shavings.

36. The color enhancement method according to claim 23, wherein said combining procedure includes homogenizing said color enhancement powder together with said supply of orange juice.

37. The color enhancement method according to claim 23, wherein the supply of orange juice is an early season, Grade B color orange juice, and said combining procedure raises the OJ Index of the color enhanced orange juice by at least 3 Color Numbers.

38. A method for enhancing orange juice color without substantially negatively impacting flavor of the originating orange juice and without incorporating any synthetic color additives, comprising:

selecting a supply of citrus fruit;

shaving natural flavedo from the supply of citrus fruit to provide a quantity of natural flavedo shavings;

washing the quantity of natural flavedo shavings with a liquid wash composition which is selected from the group consisting of an alcohol of at least C-5 and up to about C-10, an ester of up to about C-5, a ketone of up to about C-5, an alkane of up to about C-10, a halogenated hydrocarbon of up to about C-5, or combinations thereof, each said washing component being suitable for use in food processing;

reducing the shavings to a particle size of not greater than about 150 microns to thereby provide a washed color enhancement powder;

separating, after said washing, said natural flavedo shavings from said liquid wash composition to thereby provide washed shavings;

drying said washed shavings to shavings having the particle size of not greater than about 150 microns and a

selected moisture content of not greater than about 20 weight percent, based on the weight of the shavings after such drying;

combining said washed color enhancement powder with a supply of not-from-concentrate orange juice in order to thereby provide a color-enhanced not-from-concentrate orange juice; and

said washed color enhancement powder provides said color-enhanced not-from-concentrate orange juice which has sensory attributes which substantially comport with those of the supply of not-from-concentrate orange juice.

39. A color enhanced orange juice which does not incorporate any synthetic additives and which has sensory attributes which substantially conform to those of the orange juice supply prior to color enhancement, the color enhanced orange juice having been prepared by a process comprising:

selecting a supply of citrus fruit;

shaving natural flavedo from the supply of citrus fruit to provide a quantity of natural flavedo shavings;

washing the quantity of natural flavedo shavings with a liquid wash composition which is selected from the group consisting of an alcohol of at least C-5 and up to about C-10, an ester of up to about C-5, a ketone of up to about C-5, an alkane of up to about C-10, a halogenated hydrocarbon of up to about C-5, an aromatic solvent of up to about C-10, or combinations thereof, each said washing component being suitable for use in food processing;

separating, after said washing, said natural flavedo shavings from said liquid wash composition to thereby provide washed shavings;

drying said washed shavings to a selected moisture content of not greater than about 20 weight percent, based on the weight of the shavings after such drying;

reducing the washed shavings to a particle size of not greater than about 150 microns to thereby provide a washed color enhancement powder;

combining said washed color enhancement powder with a supply of orange juice in order to thereby provide a color-enhanced orange juice; and

said washed color enhancement powder provides said color-enhanced orange juice which has sensory attributes which substantially comport with those of the supply of orange juice.

40. The orange juice according to claim 39, wherein said supply of orange juice of said combining procedure is not-from-concentrate orange juice.

41. The orange juice according to claim 39, wherein said washed color enhancement powder has a particle size of between about 75 and about 100 microns.

42. The orange juice according to claim 39, wherein said combining procedure combines about 0.25 weight percent or less, based on the total weight of the color enhanced orange juice, of said washed color enhancement powder, while effecting an increase in the Color Value of the supply of orange juice, said Color Value increase being at least 1 OJ Index unit.

43. The orange juice according to claim 39, wherein said color-enhanced orange juice has between about 0.5 and about 0.75 weight percent, based on the total weight of the

color enhanced orange juice, of said washed color enhancement powder.

44. The orange juice according to claim 39, wherein said supply of orange juice is a Grade B color orange juice, and said color-enhanced orange juice is a Grade A color orange juice.

45. The orange juice according to claim 39, wherein the liquid wash composition is selected from the group consisting of an alcohol of at least C-5 and up to about C-10, an ester of up to about C-5, a ketone of up to about C-5, an alkane of up to about C-10, a halogenated hydrocarbon of up to about C-5, or combinations thereof, each said washing component being suitable for use in food processing and provides the color-enhanced orange juice having said sensory attributes which substantially comport with the supply of orange juice.

46. A color-enhanced not-from-concentrate orange juice which does not incorporate any synthetic additives and which has sensory attributes which substantially conform to those of the not-from-concentrate orange juice supply prior to color enhancement, the color enhanced orange juice including:

a natural flavedo juice enhancement powder originating from a supply of citrus fruit peel flavedo, said powder being present in the color enhanced not-from-concentrate orange juice at a level of between about 0.5 and about 0.75 weight percent, based on the total weight of the color enhanced orange juice, said powder having a particle size of not greater than about 150 microns, said powder having been washed with a wash composition which is selected from the

group consisting of an alcohol of at least C-5 and up to about C-10, an ester of up to about C-5, a ketone of up to about C-5, an alkane of up to about C-10, a halogenated hydrocarbon of up to about C-5, or combinations thereof, each said washing component being suitable for use in food processing;

a supply of not-from-concentrate orange juice which has a known Color Value; and

said color-enhanced orange juice has a Color Value of at least about 1 OJ Index unit greater than said known Color Value while having sensory attributes which substantially comport with those of said supply of not-from-concentrate orange juice having the known Color Value.

47. The orange juice according to claim 46, wherein said natural flavedo color enhancement powder has a moisture content of not greater than about 20 weight percent, based on the weight of the powder.

48. The orange juice according to claim 46, wherein said supply of citrus peel flavedo originates from Valencia orange peel or tangerine peel.

49. The orange juice according to claim 46, wherein said supply of citrus peel flavedo provides said orange juice with approximately 0.5 to approximately 1.5 mg of Vitamin A per 100 grams of said juice enhancement powder and with approximately 500 to approximately 900 mg of hesperidin per 100 grams of said juice enhancement powder.